

WHAT IS CLAIMED IS:

1. A semiconductor device in which a plurality of cells each including an output transistor formed on a substrate and a protection circuit having a plurality of protection transistors for protecting an internal circuit from an electrostatic discharge are arranged in
5 line,

wherein each said cell includes an electrode pad which outputs an output of the output transistor to the outside and is connected to the plurality of protection transistors of the protection circuit, and

10 wherein each of the electrode pads of the plurality cells is located over an associated one of the plurality of the cells, and the electrode pads are arranged in a zigzag manner and are present over a connection line of the plurality of protection transistors of the protection circuit provided in the associated one of the cells.

2. The semiconductor device of claim 1,

15 wherein the electrode pad of each said cell includes three or more pad portions which have different widths and are sequentially connected to one another and is formed in a multi-step structure having a protruding portion and a recessed portion.

3. The semiconductor device of claim 2,

20 wherein the electrode pad of each said cell includes a first pad portion having the largest width,

a second pad portion having the second largest width, and

a third pad portion having the smallest width.

25 4. The semiconductor device of claim 2,

one of the plurality of the pad portions having the smallest width is present over at least a center portion of at least one of the plurality of protection transistors located in an end portion.

5 5. The semiconductor device of claim 1,

wherein one of the pad portions having the largest width has a larger width than that of the associated cell and has part extending by a predetermined distance over an adjacent one of the plurality of cells in the inward direction of the adjacent cell.

10 6. The semiconductor device of claim 5,

wherein each said cell includes a line provided in an uppermost layer so as to be connected to the electrode pad for outputting to the outside an output of the output transistor of each said cell, and

15 wherein the line is provided at a larger distance than the predetermined distance from an end portion of the associated cell in the inward direction of the associated cell.

7. The semiconductor device of claim 1,

wherein the electrode pad of one of the plurality of the cells and the electrode pad of an adjacent one of the plurality of the cells are provided so that one of the electrode pads 20 is arranged reversely to the other.

8. The semiconductor device of claim 7,

wherein a protruding portion of one of the respective electrode pads of the two adjacent cells fits in a recessed portion of the other one of the electrode pads.

9. The semiconductor device of claim 2,

wherein in the electrode pad of one of the plurality of cells, one of the pad portions having the smallest width or one of the pad portions having the largest width has part extending in the inward direction of the inner circuit.

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10. The semiconductor device of claim 8,

wherein the electrode pad is a power supply terminal pad for supplying a predetermined voltage to the inner circuit.

10 11. The semiconductor device of claim 2,

wherein an external connection line for outputting to the outside an output of the output transistor is bonded to one of the pad portions having the largest width.

12. The semiconductor device of claim 2,

15 wherein a test probe-pin for testing the internal circuit is brought into contact with a predetermined one of the pad portions other than one of the pad portions having the largest width.

13. A semiconductor device in which a plurality of cells each including an output

20 transistor formed on a substrate are arranged in line,

wherein each said cell includes a line provided in an uppermost layer to be connected to an electrode pad for outputting to the outside an output of the output transistor, and

wherein the line is provided at a predetermined distance inwardly from a width-

25 direction end portion of the cell.

14. The semiconductor device of claim 13,
wherein the electrode pad provided over an associated one of the plurality of cells
includes a pad portion having a larger width than that of the associated cell, and
5 wherein the predetermined distance between the line and a width-direction end
portion of the associated cell in which the line is provided is set to be a larger distance than
a distance by which part of the pad portion of the electrode pad extends in the inward
direction of an adjacent cell to the associated cell beyond the width of the associated cell.